Service-Anleitung
Service Manual
Instructions de Service

CR 5900

Technische Daten (typische Werte)	**Specifications** (typical values)	**Caractéristiques techniques** (valeurs types)	**Dati tecnici** (valori tipici)	
Tunerteil	**Tuner section**	**Partie Tuner**	**Sezione sintonizzatore**	**Dual CR 5900**
Empfangsbereiche FM (UKW) AM (MW)	**Reception wavebands** FM (VHF) AM (MW)	**Games de fréquences** FM (OC) AM (OM)	**Campi di ricezione** FM (OUC) AM (onde medie)	 87,5–108 MHz 522–1611 kHz
Empfindlichkeit (an 75 Ω) FM – Mono (26 dB) FM – Stereo (46 dB)	**Sensitivity** (at 75 Ω) FM – mono (26 dB) FM – stereo (46 dB)	**Sensibilité** (à 75 ohms) FM – Mono (26 dB) FM – Stéréo (46 dB)	**Sensibilità** (su 75 ohm) FM – mono (26 dB) FM – stereo (46 dB)	 1 µV 32 µV
Trennschärfe FM stat./dyn.	**FM selectivity** stat./dyn.	**Sélectivité** FM stat./dyn.	**Selettività** FM stat./din.	80/70 dB
Geräuschspannungsabstand	**Signal/noise ratio**	**Rapport signal/bruit**	**Rapporto segnale disturbo**	70 dB
Verstärkerteil	**Amplifier section**	**Partie amplificateur**	**Sezione amplificatore**	
Ausgangsleistung Sinusleistung (8 Ω DIN 1 kHz) Sinusleistung (8 Ω IHF 20 Hz–20 kHz, 0,03 %) Musikleistung (8 Ω/4 Ω)	**Power output** RMS continuous power output (8 Ω DIN 1 kHz) RMS continuous power output (8 Ω IHF 20 Hz–20 kHz, 0.03 %) music power (8 Ω/4 Ω)	**Puissance de sortie** Puissance sinus (8 ohms DIN 1 kHz) Puissance sinus (8 ohms IHF 20 Hz–20 kHz, 0,03 %) Puissance musique (8 ohms/4 ohms)	**Potenza d'uscita** capacità sinusoidale (8 ohm DIN 1 kHz) capacità sinusoidale (8 ohm IHF 20 Hz–20 kHz, 0,03 %) Potenza musicale (8 ohm/4 ohm)	 2 × 40 W 2 × 35 W 2 × 60/85 W
Leistungsbandbreite	**Frequency response**	**Bande de puissance**	**Banda di potenza**	10–60000 Hz
Klirrfaktor bei 2/3 Leistung (1 kHz)	**Harmonic distortion** at 2/3 power (1 kHz)	**Distorsion** à 2/3 de puissance (1 kHz)	**Distorsione armonica** a 2/3 del rendimento (1 kHz)	 < 0,02 %
Fremdspannungsabstand bezogen auf Nennleistung Phono-Eingang Hochpegel-Eingänge (CD, VIDEO, TAPE)	**Signal/noise ratio** referred to rated power output Phono input High-level inputs (CD, VIDEO, TAPE)	**Rapport non pondéré son/bruit** par rapport à la puissance nominale Entrée Phono Entrées haut niveau (CD, VIDEO, TAPE)	**Selettività** riferita alla potenza nominale ingresso phono ingressi ad alte impedenze (CD, VIDEO, TAPE)	 70 dB 90 dB
Übersprechdämpfung	**Crosstalk attenuation**	**Diaphonie**	**Diafonia**	80 dB
Eingänge CD, VIDEO, TAPE PHONO	**Inputs** CD, VIDEO, TAPE PHONO	**Entrées** CD, VIDEO, TAPE PHONO	**Ingressi** CD, VIDEO, TAPE PHONO	 150 mV/47 kΩ 2,5 mV/47 kΩ
Ausgänge Druckklemmen für zwei Lautsprecherpaare 1-Koaxialbuchse ¼ inch für Kopfhörer 1-Line-Ausgang an Tape	**Outputs** Clamping terminals for two speaker pairs 1 coaxial jack, ¼ inch, for headphones 1-line output to tape	**Sorties** Bornes à pression pour deux paires de haut-parleurs 1 prise coaxiale ¼" pour écouteurs 1 sortie Line sur Tape	**Uscite** morsetti di pressione per due coppie di diffusori 1 presa coassiale ¼" per cuffia 1 uscita line su Tape	 8–16 Ohm
Leistungsaufnahme (maximal)	**Power input** (maximum)	**Consommation de courant** (maximum)	**Potenza assorbita** (massimo)	 200 Watt
Netzspannung Model Europa Model USA/Kanada Model UK	**Mains voltage** European model US/Canadian model UK model	**Voltage secteur** Modèle Europe Modèle USA/Canada Modèle Royaume-Uni	**Tensione di rete** modello Europa modello Stati Uniti/Canada modello GB	 220 V/50 Hz 120 V/60 Hz 240 V/50 Hz
Maße (Breite × Höhe × Tiefe)	**Dimensions** (width × height × depth)	**Dimensions** (largeur × hauteur × profondeur)	**Dimensioni** (larghezza × altezza × profondità)	 440 × 122 × 303 mm

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921 623 0491

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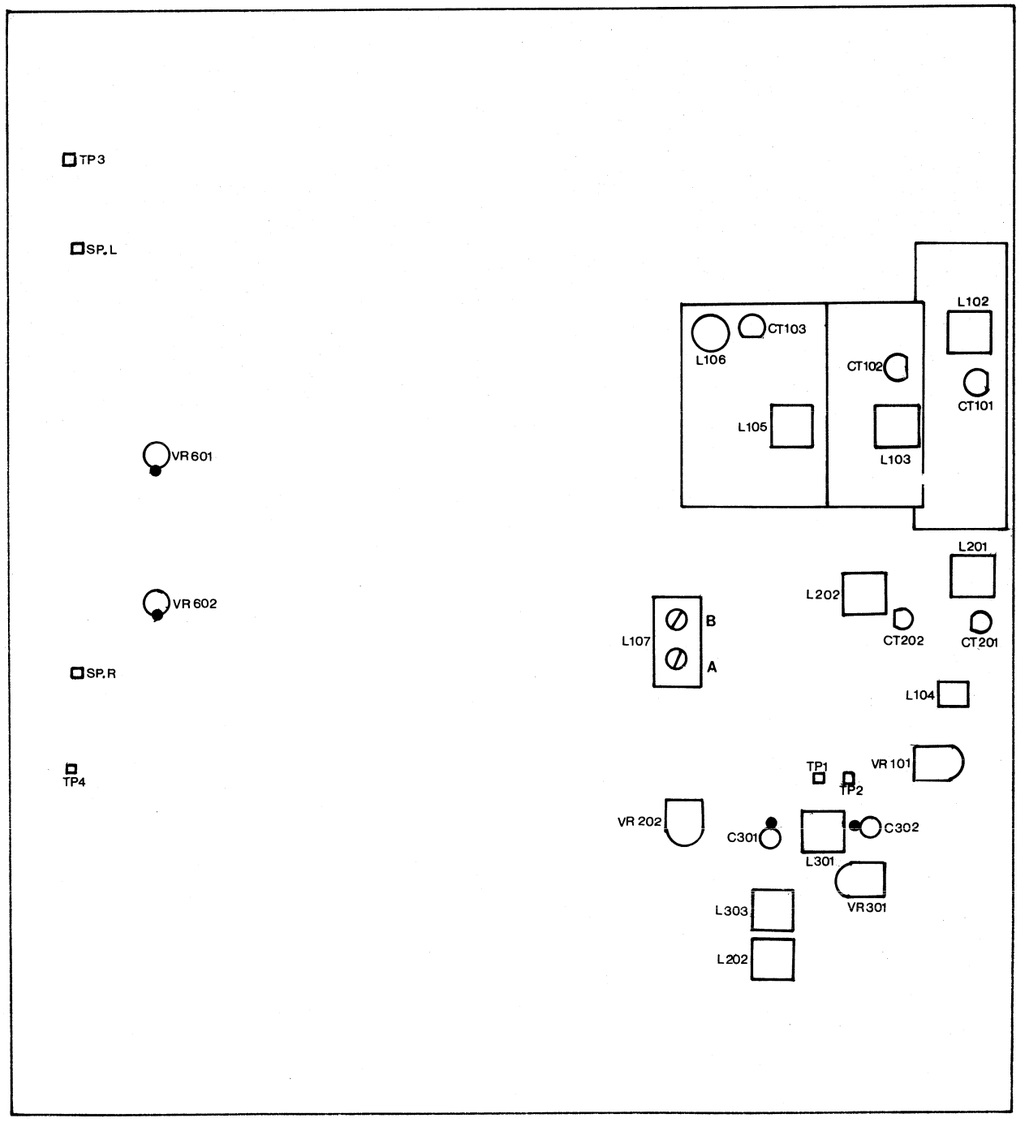
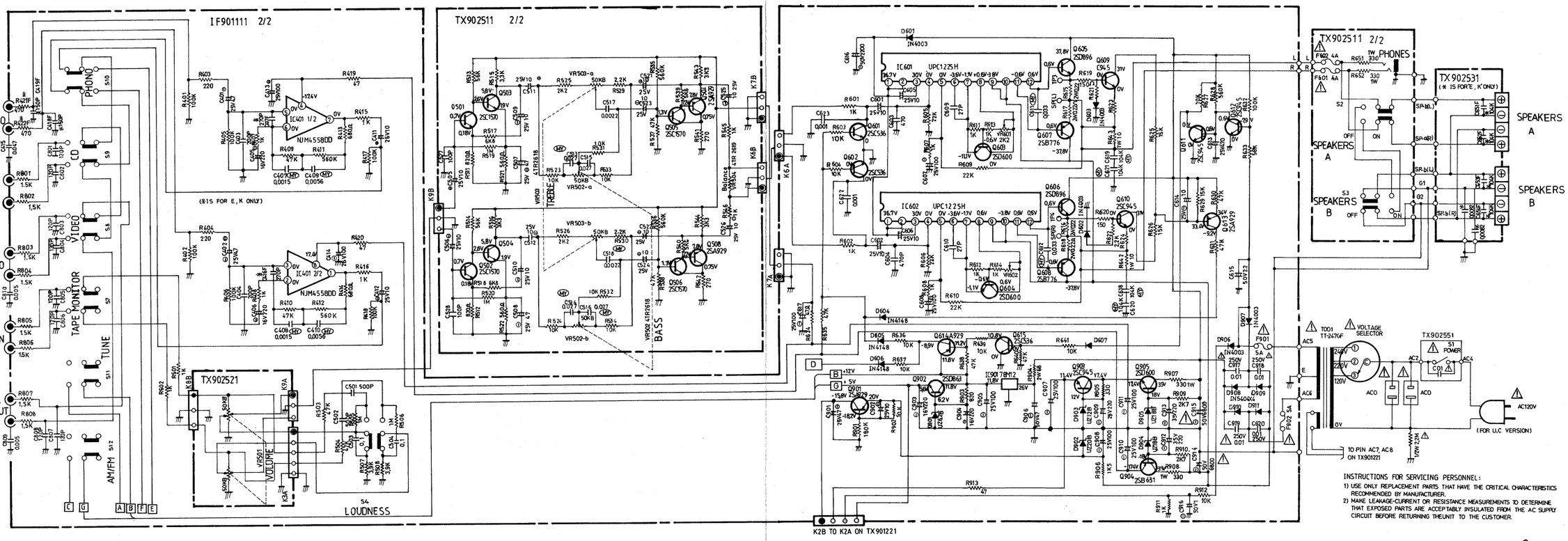
Abgleichanleitung CR 5900

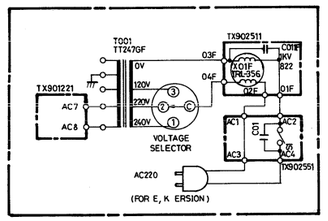
Signalquelle	Einstellung Gerät	Einstellung Signalquelle	Meßgerät Anschluß	Abgleichposition	Abgleich, Bemerkung
FM-Oszillator					
	87,5 MHz		DC Voltmeter an TP–TP 5	L 106	1,7 V DC ± 0,1 V
	108 MHz			CT 103	9,0 V DC ± 0,1 V
				Abgleich wiederholen	
FM–ZF, Vorkreis					
FM-Meßsender an 75 Ohm Antenneneingang	Monotaste: Ein Senderfreie Frequenz ca. 98 MHz	0–1 mV Hub ± 40 kHz Mod. 1 kHz ca. 98 MHz auf Deckung	Klirrfaktormeßbrücke Oszilloskop über Lastwiderstände an L/R Lautsprecher- ausgang	L 105 L 107 A	NF-Maximum
				L 107 B	NF und Klirrfaktor Minimum
	90 MHz	ca. 90 MHz auf Deckung		L 102, L 103	NF-Maximum bei min. Rauschen
	105 MHz	ca. 105 MHz auf Deckung		CT 101, CT 102	
				Vorkreisabgleich wiederholen	
FM–ZF (Feinabgleich)					
Antenne an 75 Ohm Antenneneingang	Starke FM-Sender auf seiner Sollfrequenz empfangen		DC-Voltmeter an: TP 1–TP 2	L 107 B	DC-Maximum und DC-Minimum ermitteln
				L 107 B	Spannungsmitte einstellen
				L 107 A	0 V ± 1 mV DC
				Abgleich wiederholen	
Mono-, Stereo- und Muting-Übergang, Signalanzeige, Kanaltrennung					
FM-Meßsender an 75 Ohm Antenneneingang	Senderfreie Frequenz ca. 98 MHz Mono-Taste: Aus	ca. 98 MHz auf Deckung Hub ± 40 kHz, Mod. 1 kHz 19 kHz Pilot ein 6 µV	NF-Voltmeter, Oszilloskop über Lastwiderstände an L/R Lautsprecher- ausgang	VR 201	Mono-, Stereo- und Mutingübergang einstellen
				VR 202	Dritte Signal LED muß aufleuchten
		1 mV		VR 301	Maximale Kanaltrennung
Unterdrückung Pilottonreste (19 kHz)					
FM-Meßsender an 75 Ohm Antenneneingang	Senderfreie Frequenz ca. 98 MHz Mono-Taste: aus	ca. 98 MHz auf Deckung 1–2 mV, 19 kHz Pilot ein	NF-Voltmeter Oszilloskop über Lastwiderstände an L/R Lautsprecher- ausgang	L 303 (l.K) L 302 (r.K)	Minimum
LPF (114 kHz)					
NF-Generator	Aus	114 kHz 1 Vss an C 301	Oszilloskop an C 302	L 301	Minimum
AM-Oszillator					
	522 kHz		DC-Voltmeter an TP–TP 5	L 202	1,4 V DC ± 0,1 V
	1611 kHz			CT 202	10 V DC ± 0,1 V
AM–ZF, Vorkreis					
AM-Meßsender an 75 Ohm Antenneneingang	999 kHz	10 µV–1 mV, 1 kHz, Mod. 30 % 999 kHz	NF-Voltmeter Oszilloskop über Lastwiderstände an L/R Lautsprecher- ausgang	L 204	Maximum
	594 kHz	594 kHz		L 201	
	1404 kHz	1404 kHz		CT 201	
NF-Ruhestrom					
	Volume: Min.		DC-Voltmeter an: SP-L – TP 3	VR 601	Nach 5 min. 4 mV
			SP-R – TP 4	VR 602	

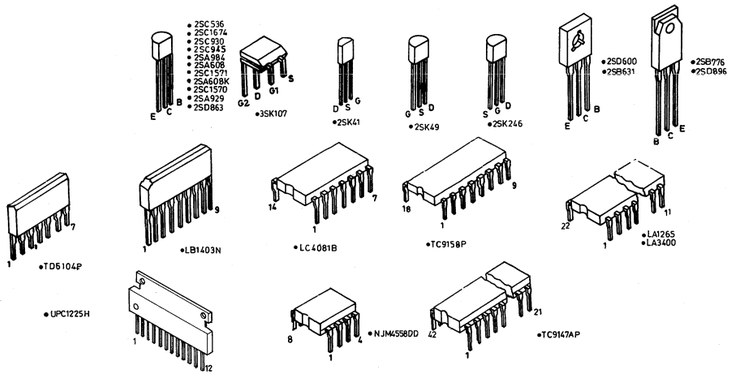
Tuning Instructions for CR 5900

Signal source	Equipment setting	Signal source setting	Connection of measuring instrument	Item to be tuned	Tuning, Remarks
FM oscillator					
	87.5 MHz		DC voltmeter to TP - TP 5	L 106	1.7 V DC ± 0.1 V
	108 MHz			CT 103	9.0 V DC ± 0.1 V
				Repeat tuning	
FM IF, input circuit					
FM signal generator to 75-ohm antenna input	Mono key: ON Frequency without transmitters approx. 98 MHz	0 - 1 mV Shift ± 40 kHz Mod. 1 kHz Tune to approx. 98 MHz	Harmonic detector oscilloscope to L/R speaker output via load resistors	L 105	AF maximum
				L 107 A	
				L 107 B	AF and harmonic distortion minimum
	90 MHz	Tune to app. 90 MHz		L 102, L 103	AF maximum at min. noise
	105 MHz	Tune to app. 105 MHz		CT 101, CT 102	
				Repeat input-circuit tuning	
FM IF (fine tuning)					
Antenna to 75-ohm antenna input	Receive strong FM transmitter at its nominal frequency		DC voltmeter to: TP 1 - TP 2	L 107 B	Determine DC maximum and DC minimum
				L 107 B	Adjust power mean
				L 107 A	0 V ± 1 mV DC
				Repeat tuning	
Transition between monaural, stereo and muting; signal indication, channel separation					
FM signal generator to 75-ohm antenna input	Frequency without transmitters approx. 98 MHz Mono key: OFF	Tune to approx. 98 MHz Shift ± 40 kHz Mod. 1 kHz 19-kHz pilot ON 6 µV	AF voltmeter, oscilloscope to L/R speaker output via load resistors	VR 201	Set monaural, stereo and muting transition
		1 mV		VR 202	Third signal LED must light up
				VR 301	Maximum channel separation
Suppression of residual pilot frequencies (19 kHz)					
FM signal generator to 75-ohm antenna input	Frequency without transmitters approx. 98 MHz Mono key: OFF	Tune to approx. 98 MHz 1 - 2 mV, 19-kHz pilot ON	AF voltmeter, oscilloscope to L/R speaker output via load resistors	L 303 (left channel)	Minimum
				L 302 (right channel)	
LPF (114 kHz)					
AF generator	OFF	114 kHz 1 Vpp to C 301	Oscilloscope to C 302	L 301	Minimum
AM oscillator					
	522 kHz		DC voltmeter to TP - TP5	L 202	1.4 V DC ± 0.1 V
	1611 kHz			CT 202	10 V DC ± 0.1 V
AM IF, input circuit					
AM signal generator to AM antenna input	999 kHz	10 µV- 1 mV, 1 kHz, Mod. 30% 999 kHz	AF voltmeter, oscilloscope to L/R speaker output via load resistors	L 204	Maximum
	594 kHz	594 kHz		L 201	
	1404 kHz	1404 kHz		CT 201	
AF closed-circuit current					
	Volume: min.		DC voltmeter to: SP-L - TP 3	VR 601	After 5 min. 4 mV
			SP-R - TP 4	VR 602	4 mV




IF901111 2/2
TX902511 2/2
TX902511 2/2
TX902531
(* IS FOR'E, K'ONLY)
SPEAKERS A
SPEAKERS B
PHONO
CD
VIDEO
TAPE MONITOR
TUNE
AM/FM
TAPE IN
TAPE OUT
TREBLE
BASS
BALANCE
VOLUME
LOUDNESS
TX902521
(E1S FOR E,K ONLY)
IC401 1/2
IC401 2/2
NJM4558DD
IC602
UPC1225H
TX902551
VOLTAGE SELECTOR
K2B TO K2A ON TX901221
TO PIN AC7, AC8 ON TX901221
AC120V
(FOR U.C VERSION)
INSTRUCTIONS FOR SERVICING PERSONNEL:
1) USE ONLY REPLACEMENT PARTS THAT HAVE THE CRITICAL CHARACTERISTICS RECOMMENDED BY MANUFACTURER.
2) MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE AC SUPPLY CIRCUIT BEFORE RETURNING THEUNIT TO THE CUSTOMER.


TQ01
TT247GF
TX901221
AC7
AC8
0V
120V
220V
240V
VOLTAGE SELECTOR
TX902511
C01F
KBV
822
03F
04F
01F
02F
AC1
AC2
AC3
AC4
TX902551
AC220
(FOR E, K ERSION)


• 2SC536
• 2SC1674
• 2SC930
• 2SC945
• 2SA984
• 2SA608
• 2SC1571
• 2SA608K
• 2SC1570
• 2SA929
• 2SD863
• 3SK107
• 2SK41
• 2SK49
• 2SK246
• 2SD600
• 2SB631
• 2SB776
• 2SD896
• TD6104P
• LB1403N
• LC4081B
• TC9158P
• LA1265
• LA3400
• UPC1225H
• NJM4558DD
• TC9147AP

IF901111 1/2

(※ IS FOR E,K ONLY)

FM

AM LOOP ANT

G AM

75Ω 300Ω

※ L108F TRL348

L101 TRL322

L102 TRL329

L103 TRL330

L105 RL233T

L106 TRL336

L107 TRL342

L201 RLV129

L202 RL105T

L203 39mH

L204 TRL343

Q101 3SK107

Q102 2SC1674

Q103 2SC930

Q104 2SC1674

Q105 2SK544

Q106 2SC536

Q107 2SA984

Q108 2SC536

Q109 2SA984

Q110 2SC536

Q111 2SC536

Q201 3SK49

Q301 2SC945

IC101 LA1265

IC301 LA3400

X101 SFE10.7MS

X102 SFE10.7S2GA

X201 SFZ450B

X301 CSB456F10

S5 MUTE OFF /MONO

S6 AUTO SCAN

TO K1A ON TX901221

TO K4A ON TX901221

TO K5A ON TX901221

K1B

K4B

K5B

TX901221

TX901211

TO K4B ON IF901111

K4A

TO K1B ON IF901111 K1A

TO K2B ON IF901111 K2A

TO K5B ON IF901111 K5A

D701~D711 : IN4148

D713~D715 : LTL3237

D716 : LTL3217

IC701 TD6104P

IC702 TC9147AP

IC703 LC4081B

IC704 LB1403

IC705 TC9158

Q701 2SC1571

Q702 2SK246

Q703 2SC536

Q704 2SC536

Q705 2SA608K

Q706 2SC536

Q707 2SA608

D001 LN224R POWER IND.

TO POWER TRANSFORMER TT-247GF

D717~D724: LTL-13215A

D725: LTL-13255A

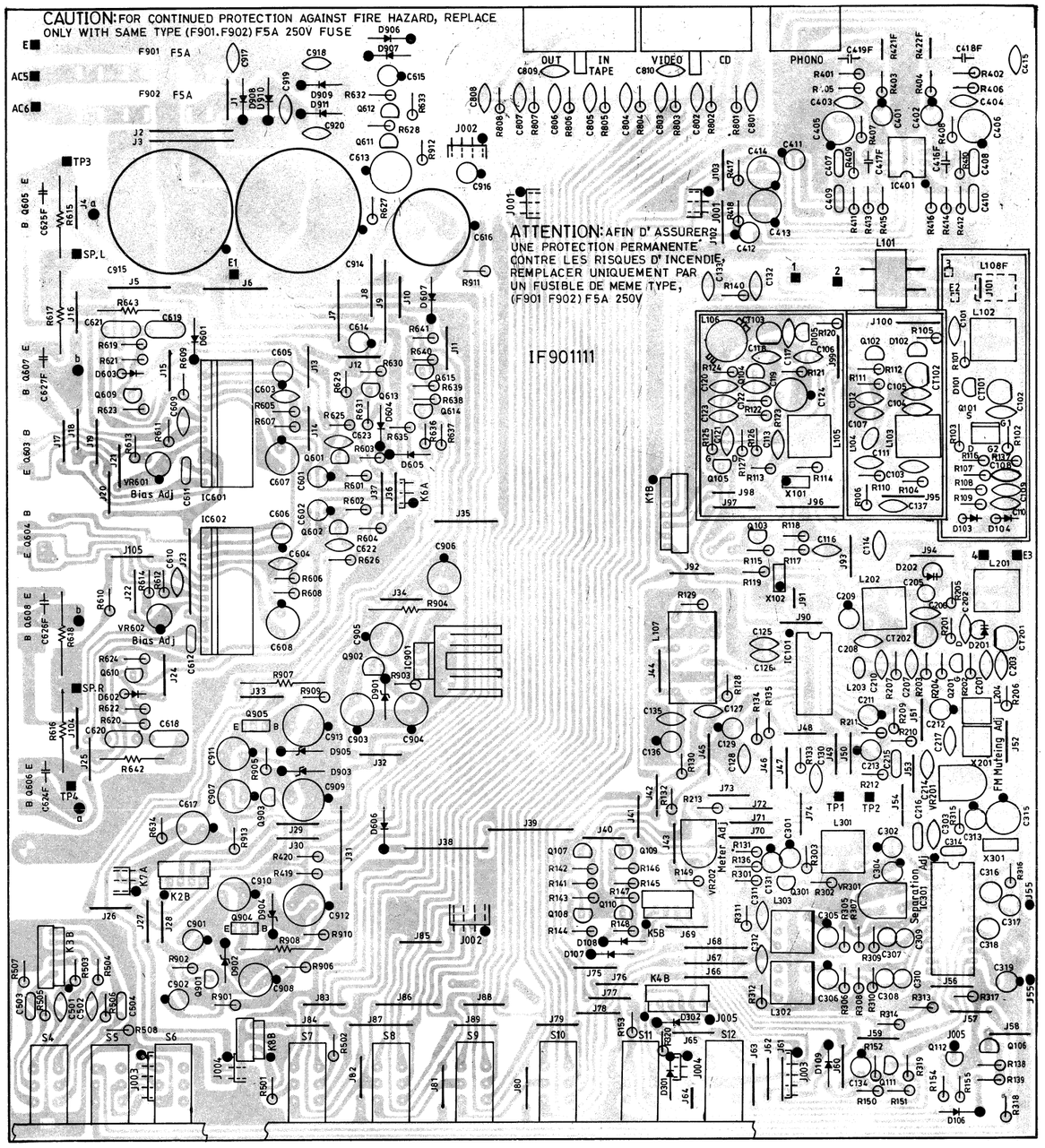
FL701 FIP 7P8F

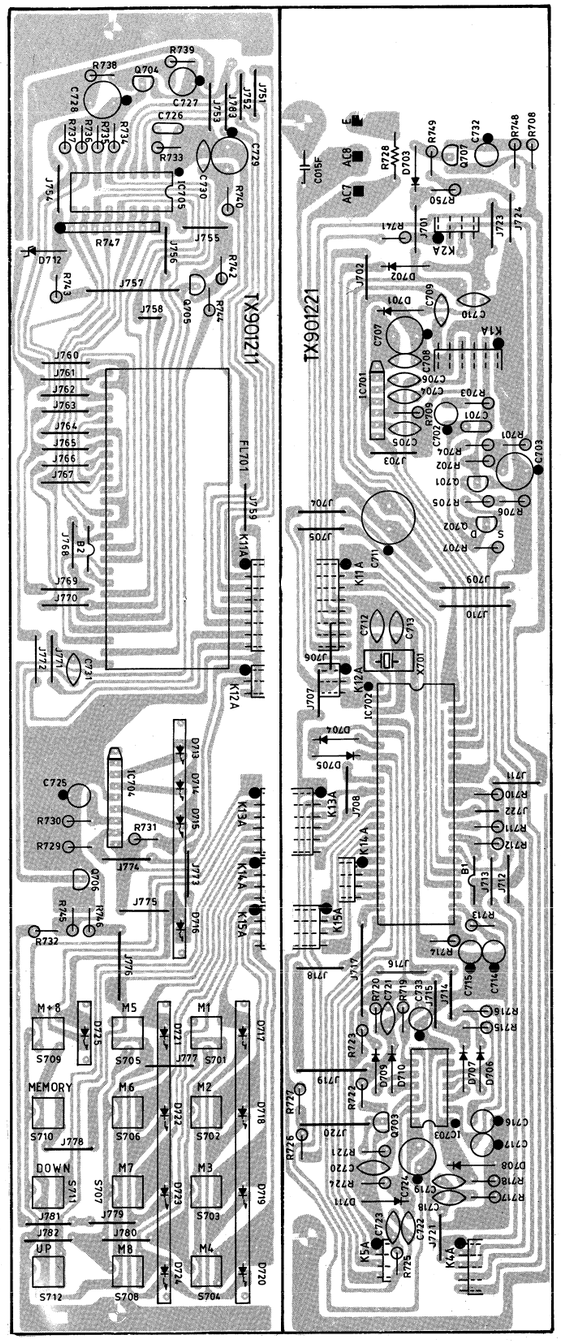
UP DOWN MEMORY M1 M2 M3 M4 M5 M6 M7 M8 +8

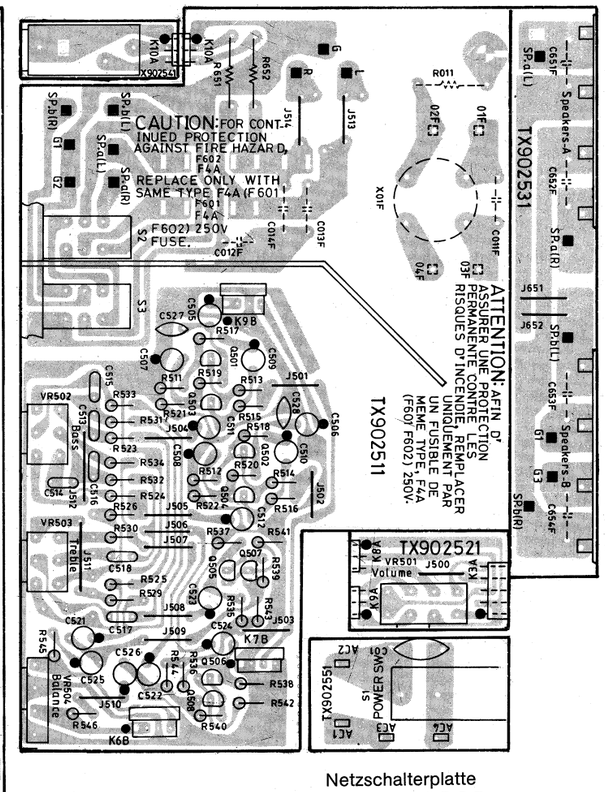
Display-/µP-Platte
Display-/µP-P.C.B.

Klangstellerplatte
Sound P.C.B

Speakers-Platte
P.C.B. Speakers
Platine haut parleurs



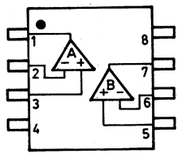



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE F4A (F601 F602) 250V FUSE.
ATTENTION: AFIN D' ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE, F4A (F601 F602) 250V.
TX902531
TX902511
TX902521
TX902551
Volume
Treble
Balance
POWER SW

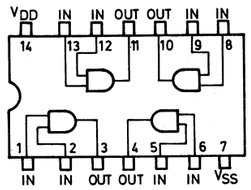
Netzschalterplatte
Power switch P.C.B.
Platine du secteur

IC-Block-Diagramm
IC Block Diagram

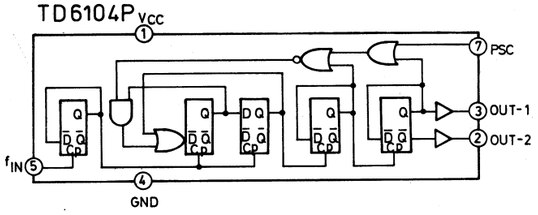
NJM4558DD



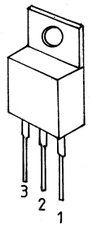
LC4081B



TD6104P

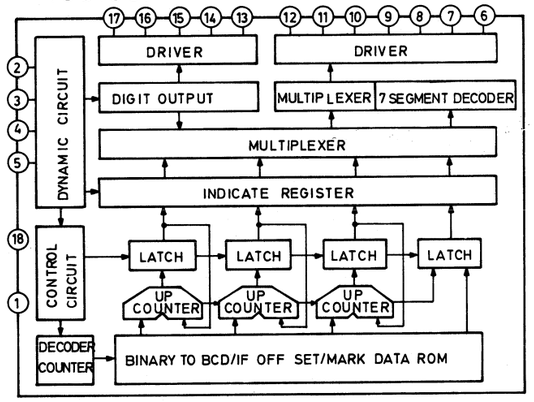


NJM78M12

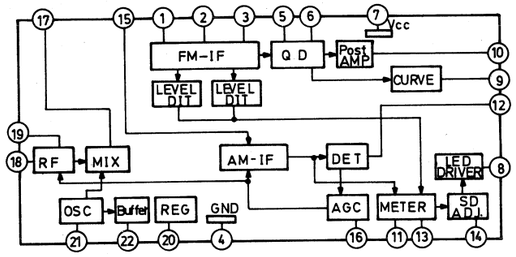


1. OUTPUT
2. GND
3. INPUT

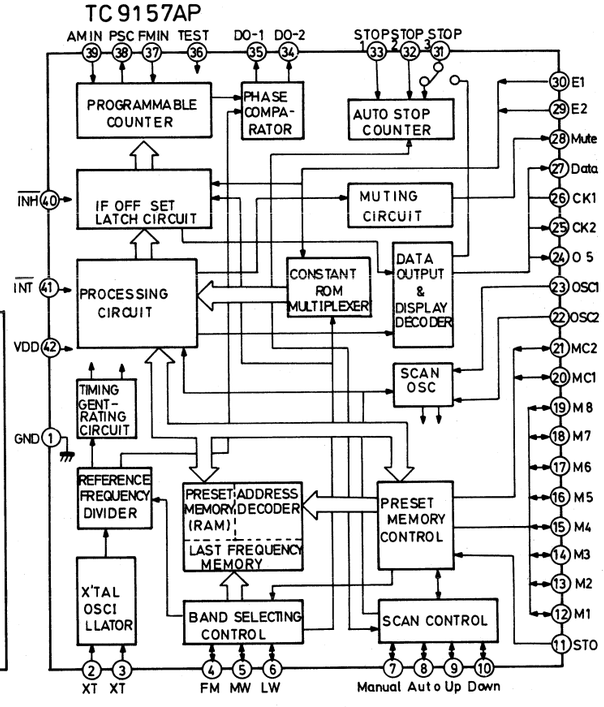
TC9158P



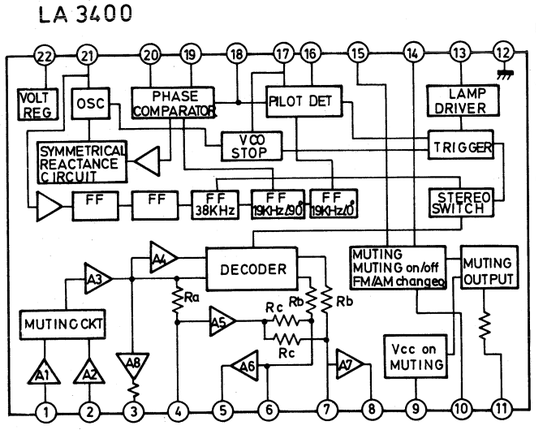
LA1265

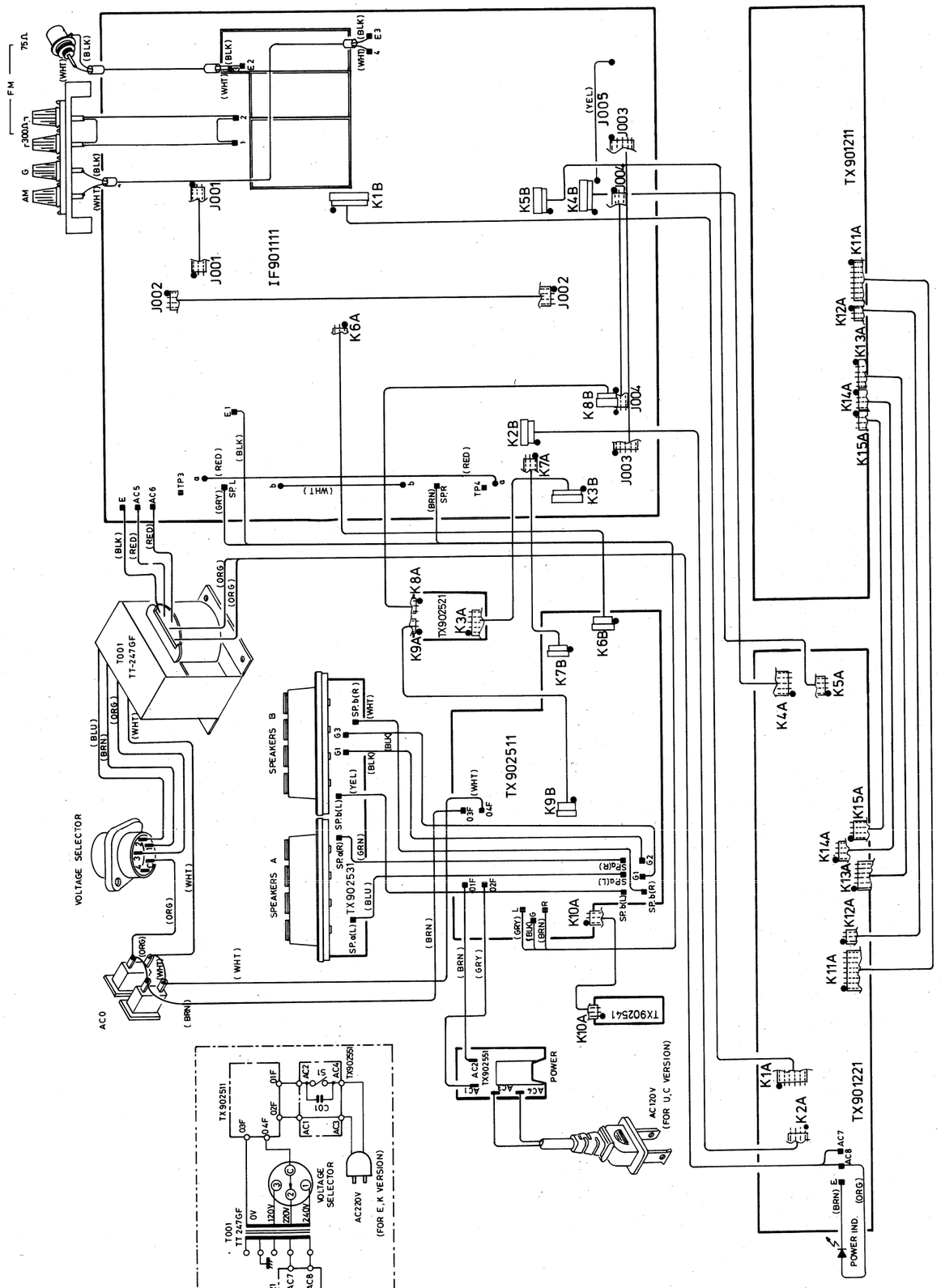


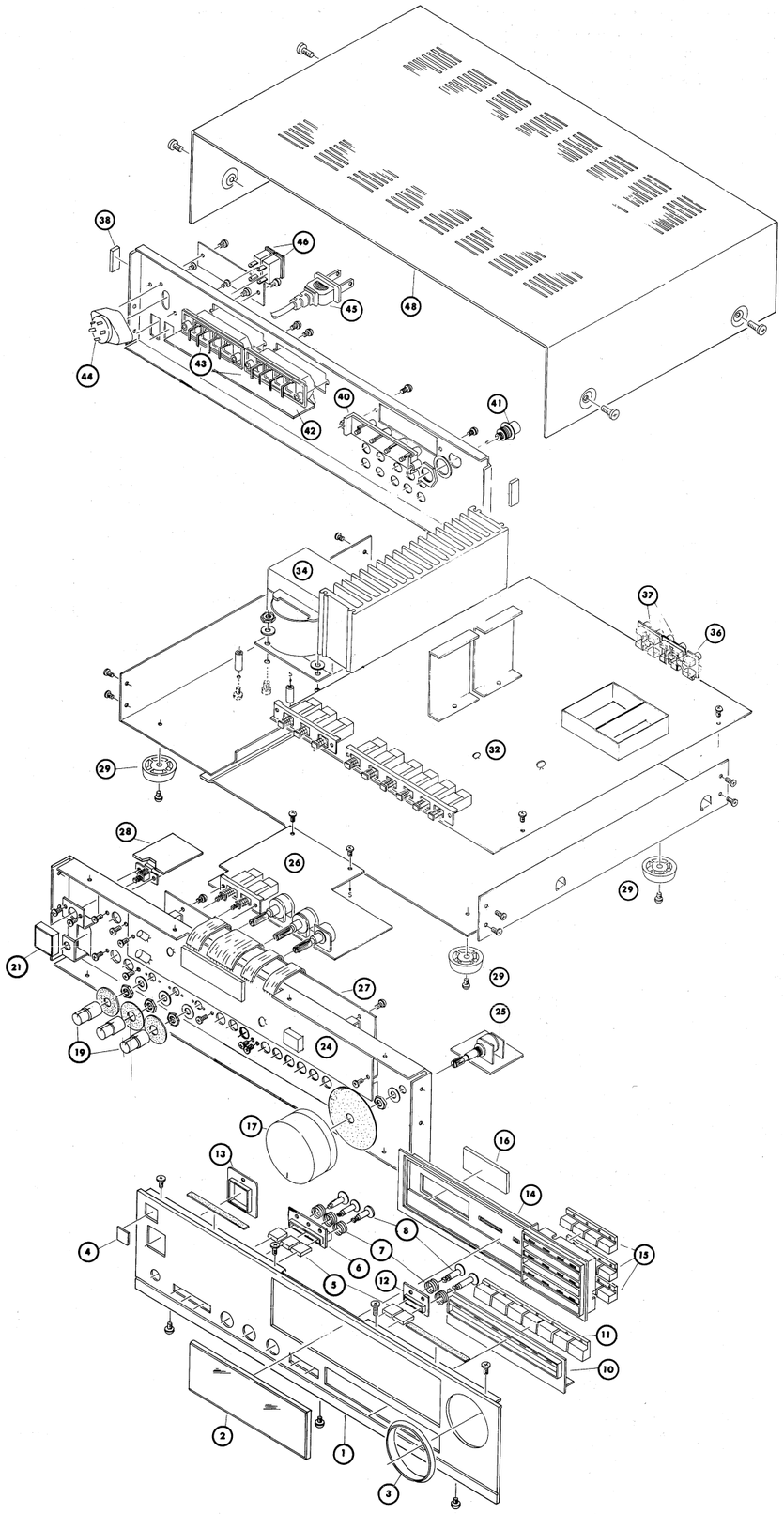
TC9157AP



LA3400







Ersatzteile · Replacement parts · Pièces détachées · CR 5900

Pos.	Art.-Nr.	Bezeichnung
1	284 518	Frontblende
2	284 519	Fenster
3	284 452	Ring
4	283 750	Dual-Zeichen
5	284 488	Taste
6	284 559	Halter 3-fach
7	284 880	Druckfeder
8	284 515	Tastenverlängerung
10	284 558	LED-Halter
11	284 531	Taste 7-fach
12	284 449	Tastenführung
13	284 487	Tastenführung
14	284 536	Display-Blende
15	284 489	Tasten 4-fach
16	284 490	Fenster
17	284 524	Drehknopf (Volume)
19	284 529	Drehknopf (Klang)
21	284 448	Knopf (Power)
22	283 743	Kopfhörerbuchse
25	284 553	Steller 50 KΩ × 2 (Volume)
28	281 999	Netzschalter
29	284 460	Fuß
34	284 694	Netztrafo
36	283 745	Cinchbuchse 2-fach
37	284 557	Tasteführung
40	284 483	Anschlußklemme
41	284 533	Antennenbuchse
43	284 527	Lautsprecheranschlußklemmen
44	283 748	Spannungswahlschalter
45	243 750	Netzkabel
46	281 992	Anschlußbuchse AC
48	284 608	Gehäuseblech
26		**Klangstellerplatte**
Q 501	284 509	Transistor 2 SC 1570
bis		
Q 506	284 509	Transistor 2 SC 1570
Q 507	284 578	Transistor 2 SA 929
Q 508	284 578	Transistor 2 SA 929
VR 502	284 522	Steller
VR 503	284 522	Steller
VR 504	284 551	Steller
S 2	284 545	Schalter
S 3	284 545	Schalter
27		**Display-/μP-Platte**
R 747	284 659	Netzwerk
C 711	284 516	Kondensator (Speicher-Akku)
D 701	223 906	Diode 1 N 4148
bis		
D 711	223 906	Diode 1 N 4148
D 712	266 922	Diode RD 6,2
D 713	284 495	LED LTL 3237
bis		
D 715	284 495	LED LTL 3237
D 716	284 494	LED LTL 3217
D 717	284 496	LED LTL 13215
bis		
D 724	284 496	LED LTL 13215
D 725	284 576	LED LTL 13255
D 726	284 591	Diode RD 3,6
Q 702	284 509	Transistor 2 SK 246
Q 703	269 092	Transistor 2 SC 536
Q 704	269 092	Transistor 2 SC 536
Q 705	284 506	Transistor 2 SA 608 K
Q 706	269 092	Transistor 2 SC 536
Q 707	284 506	Transistor 2 SA 608 K
S 701	284 486	Schalter
bis		
S 712	284 486	Schalter
IC 701	278 047	IC TD 6104 P
IC 702	278 048	IC TC 9147 BP
IC 703	284 500	IC LC 4081 B
IC 704	284 585	IC LB 1403 N
IC 705	278 057	IC TC 9158 P
FL 701	284 534	Display
32		**Grundplatte**
D 101	284 505	Diode SVC-202 AP
D 102	284 505	Diode SVC-202 AP
D 103	275 645	Diode 1 S 188
D 104	275 645	Diode 1 S 188
D 105	284 505	Diode 1 SVC-202 AP
D 106	223 906	Diode 1 N 4148
bis		
D 109	223 906	Diode 1 N 4148
Q 101	284 514	Transistor 3 SK 107 F

Pos.	Art.-Nr.	Bezeichnung
Q 102	284 510	Transistor 2 SC 1674 / LC 1674
Q 103	284 583	Transistor 2 SC 930
Q 104	284 510	Transistor 2 SC 1674 / LC 1674
Q 105	284 513	Transistor 2 SK 544
Q 106	269 092	Transistor 2 SC 536
Q 107	284 507	Transistor 2 SA 984
Q 108	269 092	Transistor 2 SC 536
Q 109	284 507	Transistor 2 SA 984
Q 110	269 092	Transistor 2 SC 536
bis		
Q 112	269 092	Transistor 2 SC 536
L 102	284 565	Spule
L 103	284 564	Spule
L 104	284 475	Spule
L 105	284 461	Spule
L 106	284 464	Spule FH OSC
L 107	284 469	Spule FM DET
L 108 F	284 481	Filter
CT 101	284 478	Trimmer
bis		
CT 103	284 478	Trimmer
X 102	284 568	Filter SFE 10,7 MJ
X 102	284 569	Filter SFE 10,7 MS
IC 101	284 502	IC LA 1265
D 201	275 855	Diode SVC 321
D 202	275 855	Diode SVC 321
L 201	284 472	Spule AM ANT
L 202	284 471	Spule AM OSC
L 301	284 463	Spule MPX
L 302	284 462	Spule FM MPX
L 303	284 462	Spule FM MPX
D 301	223 906	Diode 1 N 4148
D 302	223 906	Diode 1 N 4148
Q 301	275 260	Transistor 2 SC 945 P
X 301	284 474	Keramikfilter
IC 301	283 385	IC LA 3400 N
S 4	284 542	Schalter 3-fach
bis		
S 6	284 542	Schalter 3-fach
S 7	284 888	Schalter
bis		
S 12	284 888	Schalter
IC 401	273 253	IC NJM 4558 D–D
Q 601	269 092	Transistor 2 SC 536 F, G
Q 602	269 092	Transistor 2 SC 536 F, G
Q 603	282 002	Transistor 2 SD 600
Q 604	282 002	Transistor 2 SD 600
Q 605	284 584	Transistor 2 SD 896
Q 606	284 584	Transistor 2 SD 896
Q 607	284 579	Transistor 2 SB 776
Q 608	284 579	Transistor 2 SB 776
Q 609	275 260	Transistor 2 SC 945 P
bis		
Q 612	275 260	Transistor 2 SC 945 P
Q 613	284 578	Transistor 2 SA 929
Q 614	284 578	Transistor 2 SA 929
Q 615	269 092	Transistor 2 SC 536
D 601	282 021	Diode 1 N 4003
bis		
D 603	282 021	Diode 1 N 4003
D 604	223 906	Diode 1 N 4148
bis		
D 607	223 906	Diode 1 N 4148
IC 601	274 956	IC UPC 1225 H
IC 602	274 956	IC UPC 1225 H
C 914	284 546	Elyt-Kond. 6800 UF / 50 V
C 915	284 546	Elyt-Kond. 6800 UF / 50 V
D 901	266 922	Diode RD 6,2 EB
D 902	282 826	Diode ZPD 20
D 903	266 950	Diode RD 12 EB
D 904	284 504	Diode RD 18 E
D 905	284 504	Diode RD 18 E
D 907	282 021	Diode 1 N 4003
D 908	284 590	Diode 1 N 5404
bis		
D 911	284 590	Diode 1 N 5404
Q 901	284 578	Transistor 2 SA 929
Q 902	284 581	Transistor 2 SD 863
Q 903	275 260	Transistor 2 SC 945 P
Q 904	282 003	Transistor 2 SB 631
Q 905	282 002	Transistor 2 SD 600
IC 901	271 133	IC NJM 78 M 12 A
	284 661	Faltschachtel
	284 790	Styroporeinlage
	284 521	Hilfsantenne
	283 303	Bedienungsanleitung

Änderungen vorbehalten! Subject to change! Sous réserve de modification!